

**REMARKS****Summary of the Office Action**

In the Office Action, claims 1-6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over European Patent No. 0 959 542 to *Sugimoto, et al.* in view of U.S. Patent No. 6,114,054 to *Klein, et al.* Claims 7-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. Claims 12-16 are allowed.

**Summary of the Response to the Office Action**

Applicant adds new claim 17 to provide Applicant with a more complete scope of protection. Accordingly, claims 1-17 are pending for further consideration.

**All Subject Matter Complies With 35 U.S.C. § 103(a)**

Claims 1-6 were rejected under 35 U.S.C. § 103(a) as being unpatentable over European Patent No. 09 595 42 to *Sugimoto, et al.* in view of U.S. Patent No. 6,114,054 to *Klein, et al.* This rejection is respectfully traversed.

Applicant respectfully submits that neither *Sugimoto* nor *Klein*, either alone or in combination, teach or suggest a spark plug having at least a brightness and chroma quality for the tint of a marking layer as recited in claim 1.

*Sugimoto* discloses a spark plug glaze layer formed on an alumina-based insulator constructed of materials with very little or no lead (Pb) constituents that demonstrate resistance to cracking. The glaze can be fired at temperatures as low as 800-950°C. and exhibits flashover resistance. See the abstract of *Sugimoto*.

*Klein* discloses a method for coloring ceramic surfaces that includes the steps of providing a host lattice material composed of a colorless oxide compound that crystallizes into

one of a spinel lattice or a rutile lattice and that may be water-soluble; providing an aqueous coloring solution, a first water-soluble compound including a metal ion that is one of a two-valent metal ion or a three-valent metal ion and that colors the host lattice material, and a second water-soluble compound including a metal ion that is one of a five-valent metal ion or six-valent metal ion and that provides an electrostatic balance; and generating a mixed-phase pigment in the surface of the ceramic mass. See the abstract of *Klein*.

To establish a *prima facie* case of obviousness, three basic criteria must be met (see MPEP §§ 2142-2143). First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine reference teachings. Second, there must be a reasonable expectation of success. Third, the prior art references must teach or suggest all the claim limitations.

The Office Action fails to meet all three of these criteria. First, none of the cited references teach or suggest at least the features of a “glaze layer [which] comprises 5 mol% or less of a Pb . . . the tint of the marking layer seen through the glaze layer is 3 or less in brightness as specified by 1993 JIS: Z8721 as well as 3 or less in chroma,” as recited in independent claim 1. Moreover, neither *Sugimoto* nor *Klein* discusses low lead (Pb) glazing layers and the brightness and color integrity of tint of the marking layers underneath. Thus, there is no suggestion or motivation in the references or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings.

Second, since none of the applied references teach or suggest the above-mentioned features, one of ordinary skill in the art could not reasonably contemplate the invention as recited

in independent claim 1, from the teachings of the applied references. Therefore, the Office Action fails to establish that there was a reasonable expectation of success.

Third, as described above, neither *Sugimoto* nor *Klein*, either alone or in combination teach or suggest at least the features of a "glaze layer [which] comprises 5 mol% or less of a Pb . . . the tint of the marking layer seen through the glaze layer is 3 or less in brightness as specified by 1993 JIS: Z8721 as well as 3 or less in chroma," as recited in claim 1.

Therefore, the cited prior art references failed to teach or suggest all claim limitations.

As pointed out in M.P.E.P. § 2143.03, "[t]o establish prima facie obviousness of a claimed invention, all the claimed limitations must be taught or suggested by the prior art". *In re Royka*, 409 F.2d 981, 180 USPQ 580 (CCPA 1974). Thus, the Office Action fails to establish a *prima facie* case of obviousness at least because it does not teach all the recited claim features. Therefore, Applicant respectfully asserts that the rejection under 35 U.S.C. § 103(a) should be withdrawn because neither *Sugimoto* nor *Klein* teach or suggest each feature of independent claim 1.

The Office Action implies that controlling the amount of lead (Pb) in the glaze layer and the amount/type of metal oxide pigment in the marking layer is a "result effective variable" and is "admitted prior art." The Office Action points to page 3, lines 8-20 of the Applicant's specification as proof that a "result effective variable" has been identified in the prior art and that discovering an optimum value involves only routine skill in the art.

MPEP § 2144.05 states that "[a] particular parameter must first be recognized as a result-effective variable, *i.e.*, a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine

experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977).” Applicant respectfully submits that the Office Action incorrectly identifies the information on page 3, lines 8-20 of the Applicant's specification as a result effective variable. In fact, nothing in the above-mentioned paragraph (lines 8-20) suggests that this information was known in the prior art or is admitted by the Applicant as prior art. Further, the Office Action fails to identify any prior art references that describe these features. On the contrary, the paragraph on page 3, lines 8-20 identifies that this information was the result of the inventor's own experiments.

Because the information in the paragraph on page 3, lines 8-20 has not been identified as a result effective variable in the prior art, the optimization of the brightness and chroma levels for the tint of the marking layer cannot be obvious. Accordingly, Applicant respectfully requests that the rejection of claims 1-6 under 35 U.S.C. § 103(a) be withdrawn.

### **CONCLUSION**

In view of the foregoing, Applicant respectfully requests reconsideration and the timely allowance of the pending claims. Should the Examiner feel that there are any issues outstanding after consideration of the response, the Examiner is invited to contact the Applicant's undersigned representative to expedite prosecution.

If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time under 37 C.F.R. §1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

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